

lactoferrin.txt

Set Items Description

? e au=cadee, jenneke

Ref	Items	Index-term
E1	0	*AU=CADEE, JENNEKE
E2	3	AU=CADEE, JENNEKE ADRIANA
E3	1	AU=CADEE, JENNY
E4	1	AU=CADEE, JENNY A
E5	7	AU=CADEE, JENNY A.
E6	13	AU=CADEE, K
E7	14	AU=CADEE, K.
E8	2	AU=CADEE, K. ET AL
E9	5	AU=CADEE, KEI TH
E10	2	AU=CADEE, M
E11	1	AU=CADEE, M C
E12	10	AU=CADEE, M C.

Enter P or PAGE for more

? s e1-e12 and lactoferrin

0	AU=CADEE, JENNEKE
3	AU=CADEE, JENNEKE ADRIANA
1	AU=CADEE, JENNY
1	AU=CADEE, JENNY A
7	AU=CADEE, JENNY A.
13	AU=CADEE, K
14	AU=CADEE, K.
2	AU=CADEE, K. ET AL
5	AU=CADEE, KEI TH
2	AU=CADEE, M
1	AU=CADEE, M C
10	AU=CADEE, M C.
57397	LACTOFERRIN
S1	2 E1-E12 AND LACTOFERRIN

? t s1/3, k/1

>>>KW C option is not available in file(s): 399

1/3, K/1 (Item 1 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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150049533 CA: 150(4)49533f PATENT

Antimicrobial lactoferrin compositions for surfaces, cavities, and foodstuff

INVENTOR(AUTHOR): Cadee, Jenneke Adriana; Tips, Peter Dirk; Van Someren, Gertruida Dorothea

LOCATI ON: Neth.

ASSI GNEE: Campina B. V.

PATENT: U. S. Pat. Appl. Publ. ; US 20080318834 A1 DATE: 20081225

APPLI CATI ON: US 2008590591 (20080903) \*WO 2004NL1849 (20040224)

PAGES: 12pp. CODEN: USXXCO LANGUAGE: English

PATENT CLASSI FI CATI ONS:

CLASS: 514002000

I PCR/8 + Level Value Position Status Version Action Source Office:

A01N-0063/02 A I F B 20060101 20081225 H US

A23L-0003/3526 A I L B 20060101 20081225 H US

? e au=tips, peter

Ref	Items	Index-term
E1	1	AU=TI PS, P. D.
E2	14	AU=TI PS, PD
E3	1	*AU=TI PS, PETER

lactoferrin.txt

E4 2 AU=TI PS, PETER DI RK  
E5 1 AU=TI PS, ROBERT L.  
E6 1 AU=TI PS, SCOTT  
E7 2 AU=TI PS, T. A.  
E8 1 AU=TI PS, T. R.  
E9 1 AU=TI PS, T. R.  
E10 6 AU=TI PS, T. R.  
E11 1 AU=TI PS, TIMOTHY R.  
E12 5 AU=TI PS, W

Enter P or PAGE for more

? s e1-e12

1 AU=TI PS, P. D.  
14 AU=TI PS, PD  
1 AU=TI PS, PETER  
2 AU=TI PS, PETER DI RK  
1 AU=TI PS, ROBERT L.  
1 AU=TI PS, SCOTT  
2 AU=TI PS, T. A.  
1 AU=TI PS, T. R.  
1 AU=TI PS, T. R.  
6 AU=TI PS, T. R.  
1 AU=TI PS, TIMOTHY R.  
5 AU=TI PS, W

S2 36 E1-E12

? s s2 and lactoferrin

36 S2

57397 LACTOFERRIN

S3 2 S2 AND LACTOFERRIN

? t s3/3, k/1-2

>>>KW C option is not available in file(s): 399

3/3, K/1 (Item 1 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

(c) 2010 American Chemical Society. All rts. reserv.

150049533 CA: 150(4)49533f PATENT

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CLASS: 514002000

I PCR/8 + Level Value Position Status Version Action Source Office:

A01N-0063/02 A I F B 20060101 20081225 H US

A23L-0003/3526 A I L B 20060101 20081225 H US

3/3, K/2 (Item 2 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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143254005 CA: 143(14)254005g PATENT

Antimicrobial lactoferrin compositions for surfaces, cavities, and food

INVENTOR(AUTHOR): Cadee, Jenneke Adriana; Tips, Peter Dirk; Van Someren, Geertruida Dorothea

LOCATI ON: Neth.

ASSI GNEE: Campina B. V.

lactoferrin.txt

PATENT: PCT International ; WO 200579582 A1 DATE: 20050901

APPLICATION: WO 2004EP1849 (20040224)

PAGES: 34 pp. CODEN: PIXXD2 LANGUAGE: English

PATENT CLASSIFICATIONS:

CLASS: A01N-063/02A; A23L-003/3526B; A01N-061/00B; A01N-059/26B;

A01N-059/00B; A01N-037/44B

DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY;  
BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD;  
GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS;  
LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL;  
PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US;  
UZ; VC; VN; YU; ZA; ZM; ZW DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ  
; SD; SL; SZ; TZ; UG; ZM; ZW AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE;  
BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PT;  
RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN;  
TD; TG

? e au=van someren, geertruida

Ref	Items	Index-term
E1	3	AU=VAN SOMEREN, GD
E2	0	*AU=VAN SOMEREN, GEERTRUI DA
E3	2	AU=VAN SOMEREN, GEERTRUI DA DOROTHEA
E4	1	AU=VAN SOMEREN, GERRY
E5	1	AU=VAN SOMEREN, GERRY D.
E6	14	AU=VAN SOMEREN, H.
E7	3	AU=VAN SOMEREN, HANS
E8	3	AU=VAN SOMEREN, HARRY
E9	2	AU=VAN SOMEREN, J.
E10	1	AU=VAN SOMEREN, J. K.
E11	1	AU=VAN SOMEREN, J. W EUS
E12	1	AU=VAN SOMEREN, JOHN

Enter P or PAGE for more

? s e1-e12 and lactoferrin

3	AU=VAN SOMEREN, GD
0	AU=VAN SOMEREN, GEERTRUI DA
2	AU=VAN SOMEREN, GEERTRUI DA DOROTHEA
1	AU=VAN SOMEREN, GERRY
1	AU=VAN SOMEREN, GERRY D.
14	AU=VAN SOMEREN, H.
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2	AU=VAN SOMEREN, J.
1	AU=VAN SOMEREN, J. K.
1	AU=VAN SOMEREN, J. W EUS
1	AU=VAN SOMEREN, JOHN

57397 LACTOFERRIN

S4 2 E1-E12 AND LACTOFERRIN

? s s4 and lactoferrin

2 S4  
57397 LACTOFERRIN

S5 2 S4 AND LACTOFERRIN

? t s5/3, k/1-2

>>>KW C option is not available in file(s): 399

5/3, K/1 (Item 1 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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150049533 CA: 150(4)49533f PATENT

Antimicrobial lactoferrin compositions for surfaces, cavities, and foodstuff

INVENTOR(AUTHOR): Cadee, Jenneke Adriana; Tips, Peter Dirk; Van Someren,

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Geertruida Dorothea

LOCATION: Neth.

ASSIGNEE: Campina B. V.

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IPC/8 + Level Value Position Status Version Action Source Office:

A01N-0063/02 A I F B 20060101 20081225 H US

A23L-0003/3526 A I L B 20060101 20081225 H US

5/3, K/2 (Item 2 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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143254005 CA: 143(14)254005g PATENT

Antimicrobial lactoferrin compositions for surfaces, cavities, and food

INVENTOR(AUTHOR): Cadee, Jenneke Adriana; Tips, Peter Dirk; Van Someren,

Geertruida Dorothea

LOCATION: Neth.

ASSIGNEE: Campina B. V.

PATENT: PCT International ; WO 200579582 A1 DATE: 20050901

APPLICATION: WO 2004EP1849 (20040224)

PAGES: 34 pp. CODEN: PIXXD2 LANGUAGE: English

PATENT CLASSIFICATIONS:

CLASS: A01N-063/02A; A23L-003/3526B; A01N-061/00B; A01N-059/26B;

A01N-059/00B; A01N-037/44B

DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY;  
BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD;  
GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS;  
LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL;  
PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US;  
UZ; VC; VN; YU; ZA; ZM; ZW DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ;  
SD; SL; SZ; TZ; UG; ZM; ZW AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE;  
BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PT;  
RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN;  
TD; TG

? s lactoferrin and pH and buffer and metal and (wound? or contamin?)

Processing

Processed 20 of 47 files ...

Completed processing all files

57397 LACTOFERRIN

8536906 PH

930795 BUFFER

5597602 METAL

1186277 WOUND?

3054802 CONTAMIN?

S6 1 LACTOFERRIN AND PH AND BUFFER AND METAL AND (WOUND? OR  
CONTAMIN?)

? s (lactoferrin and buffer and metal)

57397 LACTOFERRIN

930795 BUFFER

5597602 METAL

S7 52 (LACTOFERRIN AND BUFFER AND METAL)

? rd

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.

lactoferrin.txt

S8 30 RD (unique items)  
? t s8/3, k/1-30  
>>>KW C option is not available in file(s): 399

8/3, K/1 (Item 1 from file: 5)  
DI ALOG(R) File 5: Biosis Previews(R)  
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18508211 BIOSIS NO.: 200510202711  
Structure of the zinc-saturated C-terminal lobe of bovine lactoferrin  
at 2.0 angstrom resolution  
AUTHOR: Jabeen Talat; Sharma Sujata; Singh Nagendra; Bhushan Asha; Singh  
Tej P (Reprint)  
AUTHOR ADDRESS: All India Inst Med Sci, Dept Biophys, New Delhi 110029,  
India\*\*India  
AUTHOR E-MAIL ADDRESS: tps@aiims.aiims.ac.in  
JOURNAL: Acta Crystallographica Section D Biological Crystallography 61 (  
Part 8): p1107-1115 AUG 2005 2005  
ISSN: 0907-4449  
DOCUMENT TYPE: Article  
RECORD TYPE: Abstract  
LANGUAGE: English

Structure of the zinc-saturated C-terminal lobe of bovine lactoferrin  
at 2.0 angstrom resolution

ABSTRACT: The crystal structure of the zinc-saturated C-terminal lobe of  
bovine lactoferrin has been determined at 2.0 angstrom resolution  
using crystals stabilized at pH 3.8. This is the first metal  
-saturated structure of any functional lactoferrin at such a low  
pH. Purified samples of proteolytically generated zinc-saturated  
C-terminal lobe were crystallized from 0.1 M MES buffer pH 6.5  
containing 25% (v/v) polyethyleneglycol monomethyl ether 550 and 0.1 M  
zinc sulfate heptahydrate. The crystals were transferred to 25 mM  
ammonium acetate buffer containing 25% (v/v) polyethyleneglycol  
monomethyl ether 550 and the pH was gradually changed from..

...mounted on an RU-300 rotating-anode X-ray generator using crystals  
soaked in the buffer at pH 3.8. The structure was determined with  
the molecular-replacement method using the coordinates of the monoferric  
C-terminal lobe of bovine lactoferrin as a search model and was  
refined to an R factor of 0.192 for...

...present structure is essentially similar to that of the monoferric  
C-terminal lobe of bovine lactoferrin, although it contains Zn<sup>2+</sup> in  
place of Fe<sup>3+</sup> in the metal-binding cleft as well as two additional  
Zn<sup>2+</sup> ions on the surface of the C...

...the largest number observed to date. The structure shows that the  
C-terminal lobe of lactoferrin is capable of sequestering a Zn<sup>2+</sup>  
ion at a pH of 3.8. This implies...

DESCRIPTORS:  
CHEMICALS & BIOCHEMICALS: ...lactoferrin;

8/3, K/2 (Item 2 from file: 5)  
DI ALOG(R) File 5: Biosis Previews(R)  
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17696017 BIOSIS NO.: 200400066774  
Small molecular ion adsorption on proteins and DNAs revealed by separation  
techniques.

lactoferrin.txt

AUTHOR: Rabiller-Baudry Murielle (Reprint); Chaufer Bernard  
AUTHOR ADDRESS: Laboratoire des Procédés de Séparation, Université Rennes  
1, UC INRA, 263 Avenue du Général Leclerc, Campus de Beaulieu, Bat. 10A,  
35042, CS 74205, Rennes Cedex, France\*\*France  
AUTHOR E-MAIL ADDRESS: murielle.rabiller-baudry@univ-rennes1.fr  
JOURNAL: Journal of Chromatography B 797 (1-2): p331-345 25 November, 2003  
2003  
MEDIUM: print  
ISSN: 1570-0232 (ISSN print)  
DOCUMENT TYPE: Article; Literature Review  
RECORD TYPE: Abstract  
LANGUAGE: English

... ABSTRACT: using high-performance liquid chromatography (HPLC: ion  
exchange, reversed phase without the well-identified immobilised  
metal affinity chromatography) and capillary zone electrophoresis  
(CZE). This review focuses on the binding of proteins...

DESCRIPTORS:  
CHEMICALS & BIOCHEMICALS: ...lactoferrin; ...

...phosphate buffer;

8/3, K/3 (Item 3 from file: 5)  
DIALOG(R) File 5: Biosis Previews(R)  
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17524659 BIOSIS NO.: 200300478614  
Crystal structure of a proteolytically generated functional monoferric  
C-lobe of bovine lactoferrin at 1.9 Å resolution.  
AUTHOR: Sharma Sujata; Jasti Jayasankar; Kumar Janesh; Mohanty Ashok K;  
Singh Tej P (Reprint)  
AUTHOR ADDRESS: Department of Biophysics, All India Institute of Medical  
Sciences, Ansari Nagar, New Delhi, 110029, India\*\*India  
AUTHOR E-MAIL ADDRESS: tps@aims.aims.ac.in  
JOURNAL: Journal of Molecular Biology 331 (2): p485-496 8 August 2003 2003  
MEDIUM: print  
ISSN: 0022-2836 (ISSN print)  
DOCUMENT TYPE: Article  
RECORD TYPE: Abstract  
LANGUAGE: English

Crystal structure of a proteolytically generated functional monoferric  
C-lobe of bovine lactoferrin at 1.9 Å resolution.

ABSTRACT: This is the first crystal structure of a proteolytically  
generated functional C-lobe of lactoferrin. The purified samples of  
iron-saturated C-lobe were crystallized in 0.1 M Mes buffer (pH  
6.5) containing 25% (v/v) poly(ethylene glycol) monomethyl ether 550 M and  
0.1...

...by the molecular replacement method using the coordinates of the  
C-terminal half of bovine lactoferrin as a search model and refined  
to an R-factor of 0.193 for all...

...the C-lobe is essentially the same as that of C-terminal half of bovine  
lactoferrin but differs slightly in conformations of some of the  
loops and reveals a number of...

...been observed in the structure whereas only four were reported in the  
structure of intact lactoferrin, although domain orientations have  
been found similar in the two structures. The good quality of...

Lactoferrin.txt

...has also revealed all the ten oligosaccharide units in the structure. The observation of two metal ions at sites other than the iron-binding cleft is another novel feature of the...

DESCRIPTORS:

CHEMICALS & BIOCHEMICALS: Lactoferrin--

8/3, K/4 (Item 4 from file: 5)  
DIALOG(R) File 5: Biosis Previews(R)  
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14976320 BIOSIS NO.: 199900235980

Effect of lactoferrin on oxidative stability of corn oil emulsions and liposomes

AUTHOR: Huang Shu-Wen; Satue-Gracia M Teresa; Frankel Edwin N (Reprint); German J Bruce

AUTHOR ADDRESS: Department of Food Science and Technology, University of California, Davis, CA, 95616, USA\*\*USA

JOURNAL: Journal of Agricultural and Food Chemistry 47 (4): p1356-1361

April, 1999 1999

MEDIUM print

ISSN: 0021-8561

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

Effect of lactoferrin on oxidative stability of corn oil emulsions and liposomes

ABSTRACT: Interest in using lactoferrin in foods for its antimicrobial activity inspired the present study of its antioxidant activity. Natural bovine lactoferrin inhibited oxidation in buffered corn oil emulsions and lecithin liposome systems at pH 6.6 and 50 degreeC. The antioxidant activity increased with lactoferrin concentration in both phosphate- and Tris-buffered emulsions, but not in both buffered liposome systems. A mixture of 1 µM lactoferrin and 0.5 µM ferrous ions was a significantly better antioxidant than 1 µM lactoferrin alone in Tris-buffered emulsions and in phosphate-buffered liposomes. Lactoferrin was a prooxidant at 1 µM in phosphate-buffered liposomes and at 15 and 20...

...in Tris-buffered liposomes. Copper was a stronger prooxidant than iron in both buffered emulsions. Lactoferrin decreased the prooxidant effect of iron, but not of copper, in emulsions. The antioxidant or prooxidant activities of lactoferrin depended on the lipid system, buffer, its concentration, the presence of metal ions, and oxidation time.

DESCRIPTORS:

CHEMICALS & BIOCHEMICALS: ...Lactoferrin--

8/3, K/5 (Item 5 from file: 5)  
DIALOG(R) File 5: Biosis Previews(R)  
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12396265 BIOSIS NO.: 199497417550

Isolation of immunoglobulins from cheese whey using ultrafiltration and immobilized metal affinity chromatography

AUTHOR: Fukumoto J R; Li-Chan E; Kwan L; Nakai S (Reprint)

AUTHOR ADDRESS: Dep. Food Sci., Univ. British Columbia, 6650 NW Marine

lactoferrin.txt

Drive, Vancouver, BC V6T 1Z4, Canada\*\*Canada  
JOURNAL: Food Research International 27 (4): p335-348 1994 1994  
ISSN: 0963-9969  
DOCUMENT TYPE: Article  
RECORD TYPE: Abstract  
LANGUAGE: English

Isolation of immunoglobulins from cheese whey using ultrafiltration and immobilized metal affinity chromatography

...ABSTRACT: method was developed to isolate immunoglobulins (Ig) from cheese whey using ultrafiltration (UF) and immobilized metal affinity chromatography (IMAC). Cheddar cheese whey was concentrated up to 30 times using UF prior...

...1240 mg of IgG could be isolated with 52% purity using glycine in the eluting buffer. Glycine was found to be a better competing ligand in the eluting buffer than NH<sub>4</sub>Cl. Approximately 152 mg of lactoferrin and 90 mg of lactoperoxidase were isolated with the IgG. The concentration factor, IMAC matrix...

8/3, K/6 (Item 6 from file: 5)  
DI ALOG(R) File 5: Biosis Previews(R)  
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09753389 BIOSIS NO.: 198988068504  
GEL ELECTROPHORESIS OF HUMAN TEARS REVEALS VARIOUS FORMS OF TEAR LACTOFERRIN  
AUTHOR: KIJLSTRA A (Reprint); KUIZENGA A; VAN DER VELDE M; VAN HAERINGEN N  
J  
AUTHOR ADDRESS: DEP OPHTHALMO-IMMUNOL, NETH OPHTHALMIC RES INST, PO BOX 12141, 1100 AC AMSTERDAM, NETH\*\*NETHERLANDS  
JOURNAL: Current Eye Research 8 (6): p581-588 1989  
ISSN: 0271-3683  
DOCUMENT TYPE: Article  
RECORD TYPE: Abstract  
LANGUAGE: ENGLISH

GEL ELECTROPHORESIS OF HUMAN TEARS REVEALS VARIOUS FORMS OF TEAR LACTOFERRIN

ABSTRACT: Lactoferrin is a metal binding protein, which is present in high concentrations in human tears. Little is known concerning the exact molecular shape of lactoferrin in tears. Sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) and immunoblotting experiments showed that...

...PAGE analysis of human tears under non reducing conditions and pretreatment of tears in sample buffer at room temperature revealed lactoferrin in a major form of 60 kD, a minor form of 64 kD and a ...

...prior to SDS-PAGE analysis resulted in a shift in the apparent molecular weight of lactoferrin to 78 kD and 83 kD for the major and minor form respectively. Chromatography of...

...as enzymatic deglycosylation showed that the difference in molecular weight of the major and minor lactoferrin form was not due to a variation in the carbohydrate side chains. The presence of...

...found that addition of iron ions to human tears resulted in a shift of tear lactoferrin to a lower molecular weight species of about 52 kD, coinciding with the third lactoferrin form mentioned above and



Lactoferrin.txt

a small protein band of approximately 57 kD, representing the iron saturated minor lactoferrin form. Similar findings were observed using purified milk lactoferrin. Increasing the temperature prior to sample application or disruption of disulfide bridges dissociated the iron-lactoferrin complex. These experiments indicate that the minor lactoferrin form is a larger peptide than the major form and may represent a lactoferrin precursor. Furthermore this report is the first showing the presence of iron saturated lactoferrin in human tears, which may have been missed by earlier investigations due to high temperature...

8/3, K/7 (Item 1 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
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20525247 Genuine Article#: 586VA No. References: 43  
Title: Roles of charge interactions on astringency of whey proteins at low pH  
Author: Vardhanabhuti B (REPRINT) ; Kelly MA; Luck PJ; Drake MA; Foegeding EA

Author Email Address: bvardha@ncsu.edu

Corporate Source: N Carolina State Univ, Dept Food Bioproc & Nutr Sci, Raleigh// NC/ 27695 (REPRINT); N Carolina State Univ, Dept Food Bioproc & Nutr Sci, Raleigh// NC/ 27695

Journal: JOURNAL OF DAIRY SCIENCE, 2010, V93, N5 (MAY), P1890-1899

ISSN: 0022-0302 Publication Date: 20100500

Digital Object Identifier: 10.3168/jds.2009-2780

Publisher: AMER DAIRY SCIENCE ASSOC-ADSA, 2441 VILLAGE GREEN PL, CHAMPAIGN, IL 61822 USA

Funding: Paper number 09-23 of the Journal Series of the Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh 276957624. This project was supported by the National Research Initiative program of the USDA Cooperative State Research, Education, and Extension Service (CSREES), grant number 2006-35503-17066. Support from the North Carolina Agricultural Research Service (Raleigh) and Southeast Dairy Food Research Center (Raleigh, NC) are gratefully acknowledged. The use of trade names in this publication implies neither endorsement by the North Carolina Agricultural Research Service of the products named nor criticism of similar ones not mentioned. The authors are very grateful for the beta-lactoglobulin and WPI donated by Davisco Foods International Inc. (Le Sueur, MN) and the WPI and lactoferrin donated by Gambia Nutritional (Twin Falls, ID).

Funding Organization -- Grant Number:

USDA Cooperative State Research, Education, and Extension Service (CSREES) -- 2006-35503-17066

North Carolina Agricultural Research Service (Raleigh)

Southeast Dairy Food Research Center (Raleigh, NC)

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

... Language: and WPI donated by Davisco Foods International Inc. (Le Sueur, MN) and the WPI and lactoferrin donated by Gambia Nutritional (Twin Falls, ID).

... Abstract: This study compared the astringency of beta-lactoglobulin (beta-LG) at low pH with phosphate buffer controls having the same amount of phosphate and at similar pH. Results showed that beta...

... and that proteins contribute to astringency. When comparing among various whey protein isolates (WPI) and lactoferrin at pH 3.5, 4.5, and 7.0, lactoferrin was astringent at pH 7.0 where no acid was added. In contrast, astringency of all WPI decreased at pH 7.0. This can be explained by lactoferrin remaining positively charged

lactoferrin.txt

at pH 7.0 and able to interact with negatively charged saliva...

...negatively charged WPI would not interact. Charge interactions were further supported by beta-LG or lactoferrin and salivary proteins precipitating when mixed at conditions where beta-LG, lactoferrin, or saliva themselves did not precipitate. It can be concluded that interactions between positively charged...

...Identifiers: METAL-BINDING CHARACTERISTICS; SALIVARY PROTEINS; BOVINE LACTOFERRIN; ORGANIC ACIDS; TANNINS; TASTE; PROCYANIDINS; BEVERAGES; MILK

8/3, K/8 (Item 2 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
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11913026 Genuine Article#: 709EH No. References: 45

Title: Crystal structure of a proteolytically generated functional monoferric C-lobe of bovine lactoferrin at 1.9 angstrom resolution

Author: Sharma S; Jasti J; Kumar J; Mohanty AK; Singh TP (REPRINT)  
Corporate Source: All India Inst Med Sci, Dept Biophys, Delhi 110029//India/ (REPRINT); All India Inst Med Sci, Dept Biophys, Delhi 110029//India/  
Journal: JOURNAL OF MOLECULAR BIOLOGY, 2003, V331, N2 (AUG 8), P485-496  
ISSN: 0022-2836 Publication Date: 20030808  
Publisher: ACADEMIC PRESS LTD ELSEVIER SCIENCE LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND  
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Crystal structure of a proteolytically generated functional monoferric C-lobe of bovine lactoferrin at 1.9 angstrom resolution

Abstract: This is the first crystal structure of a proteolytically generated functional C-lobe of lactoferrin. The purified samples of iron-saturated C-lobe were crystallized in 0.1 M Mes buffer (pH 6.5) containing 25% (v/v) polyethylenglycol monomethyl ether 550 M and 0.1...

...by the molecular replacement method using the coordinates of the C-terminal half of bovine lactoferrin as a search model and refined to an R-factor of 0.193 for all...

...the C-lobe is essentially the same as that of C-terminal half of bovine lactoferrin but differs slightly in conformations of some of the loops and reveals a number of...

...been observed in the structure whereas only four were reported in the structure of intact lactoferrin, although domain orientations have been found similar in the two structures. The good quality of...

...has also revealed all the ten oligosaccharide units in the structure. The observation of two metal ions at sites other than the iron-binding cleft is another novel feature of the...

...Identifiers: INDUCED CONFORMATIONAL-CHANGE; X-RAY-DIFFRACTION; N-TERMINAL HALF; IRON-BINDING; BUFFALO LACTOFERRIN; 3-DIMENSIONAL STRUCTURE; DIFERRIC LACTOFERRIN; HUMAN APOLACTOFERRIN; PROTEINASE-K; TRANSFERRINS

8/3, K/9 (Item 3 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
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07412548 Genuine Article#: 162WT No. References: 38

lactoferrin.txt

Title: N-lobe versus C-lobe complexation of bismuth by human transferrin  
Author: Sun HZ; Li HY; Mason AB; Woodworth RC; Sadler PJ (REPRINT)  
Corporate Source: UNI V EDINBURGH, DEPT CHEM, W MAINS RD/ EDINBURGH EH9  
3JJ/ MIDLOTHIAN/ SCOTLAND/ (REPRINT); UNI V EDINBURGH, DEPT CHEM/ EDINBURGH  
EH9 3JJ/ MIDLOTHIAN/ SCOTLAND/; UNI V VERMONT, COLL MED, DEPT  
BIOCHEM/ BURLINGTON/ VT/ 05405  
Journal: BIOCHEMICAL JOURNAL, 1999, V337, 1 (JAN 1), P105-111  
ISSN: 0264-6021 Publication Date: 19990101  
Publisher: PORTLAND PRESS, 59 PORTLAND PLACE, LONDON W1N 3AJ, ENGLAND  
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Abstract: Interactions of recombinant N-lobe of human serum transferrin (hTF/2N) with Bi<sup>3+</sup>, a metal ion widely used in medicine, have been investigated by both UV and NMR spectroscopy. The...

...to be log KS 18.9+/-0.2 in 5 mM bicarbonate/10 mM Hepes buffer at 310 K, pH 7.4. The presence of Fe<sup>3+</sup> in the C-lobe of...  
...Descriptors: metal binding; NMR spectroscopy; protein conformation; stability constant; serum protein  
...Identifiers: HUMAN-SERUM TRANSFERRIN; METAL-BINDING; EQUILIBRIUM CONSTANTS; HALF-MOLECULES; OVOTRANSFERRIN; RESOLUTION; IRON; RATIONALIZATION; COOPERATIVITY; LACTOFERRIN

8/3, K/10 (Item 4 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
(c) 2010 The Thomson Corp. All rights reserved.

07142173 Genuine Article#: 128AW No. References: 57  
Title: Kinetic studies on the removal of iron and aluminum from recombinant and site-directed mutant N-lobe half transferrins  
Author: Li YJ; Harris WR (REPRINT); Maxwell A; MacGillivray RTA; Brown T  
Corporate Source: UNI V MISSOURI, DEPT CHEM/ ST LOUIS/ MO/ 63121 (REPRINT);  
UNI V MISSOURI, DEPT CHEM/ ST LOUIS/ MO/ 63121; UNI V BRITISH COLUMBIA, DEPT  
BIOCHEM/ VANCOUVER/ BC V6T 1Z3/ CANADA/  
Journal: BIOCHEMISTRY, 1998, V37, N40 (OCT 6), P14157-14166  
ISSN: 0006-2960 Publication Date: 19981006  
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW WASHINGTON, DC 20036  
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Abstract: Kinetic studies have been conducted in pH 7.4 Hepes buffer at 25 degrees C on the removal of Fe(III) and Al(III) from the...

...first-order with respect to the ligand. This suggests that the first-order component of metal release from transferrin involves the displacement of the synergistic carbonate anion. Since iron removal from...

...residues are not associated with the allosteric effects of inorganic anions on the rates of metal removal.  
...Identifiers: HUMAN-SERUM TRANSFERRIN; TERMINAL MONOFERRIC TRANSFERRIN; ANGSTROM RESOLUTION; DUCK OVOTRANSFERRIN; HEN OVOTRANSFERRIN; HUMAN LACTOFERRIN; CRYSTAL-STRUCTURE; X-RAY; RELEASE; BINDING

8/3, K/11 (Item 5 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
(c) 2010 The Thomson Corp. All rights reserved.

06694693 Genuine Article#: ZL190 No. References: 46  
Title: Binding of monovalent anions to human serum transferrin  
Author: Harris WR (REPRINT); Cafferty AM; Abdollahi S; Trankler K  
Corporate Source: UNI V MISSOURI, DEPT CHEM/ ST LOUIS/ MO/ 63121 (REPRINT)

lactoferrin.txt

Journal: BIOCHIMICA ET BIOPHYSICA ACTA- PROTEIN STRUCTURE AND MOLECULAR  
ENZYMOLOGY, 1998, V1383, N2 (APR 2), P197-210  
ISSN: 0167-4838 Publication Date: 19980402  
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS  
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

... Abstract: function is to bind iron and transport it through the blood.  
Apotransferrin has two specific metal-binding sites that bind a  
variety of metal ions in addition to the ferric ion. The  
distinguishing feature of the transferrins is that a 'synergistic'  
bicarbonate anion is bound along with the metal ion to form a  
stable  $\text{Fe}^{3+}\text{-CO}_3\text{-Tf}$  ternary complex. Previous research has shown that...  
... is proposed which predicts that the binding of nonsynergistic anions to  
apotransferrin will interfere with metal binding by competing  
directly with the binding of the synergistic bicarbonate anion.  
Difference UV data...  
... in human serum and to estimate the extent to which competition from  
anions in the buffer will interfere with metal-binding to  
apotransferrin. (C) 1998 Elsevier Science B.V.  
... Identifiers: INORGANIC ANIONS; HEXACYCLEN COMPLEXES; RESOLUTION; IRON;  
LACTOFERRIN; SITES; OVOTRANSFERRIN; PYROPHOSPHATE; SELECTIVITY;  
CONSTANTS

8/3, K/12 (Item 6 from file: 34)  
DI ALOG(R) File 34: Sci Search(R) Cited Ref Sci  
(c) 2010 The Thomson Corp. All rts. reserv.

05159714 Genuine Article#: VE101 No. References: 33  
Title: SPECTROPHOTOMETRIC TITRATION WITH COBALT(III) FOR THE DETERMINATION  
OF ACCURATE ABSORPTION COEFFICIENTS OF TRANSFERRINS  
Author: HE QY; MASON AB; WOODWORTH RC  
Corporate Source: UNIV VERMONT, DEPT BIOCHEM, COLL MED/ BURLINGTON/ VT/ 05405  
Journal: BIOCHEMICAL JOURNAL, 1996, V318, AUG (AUG 15), P145-148  
ISSN: 0264-6021  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

... Abstract: cobalt feature sharp break-points and do not destroy the  
protein samples. The choice of buffer was found to be important,  
depending on the metal-binding avidity of the proteins. Cobalt  
titration should prove useful for studying the comparative metal  
-binding properties of transferrin and mutants of transferrin being  
generated by recombinant technology.  
... Identifiers: HUMAN- SERUM TRANSFERRIN; N- TERMINAL HALF; THERMODYNAMIC  
BINDING CONSTANTS; HUMAN LACTOFERRIN; IRON RELEASE; RESOLUTION;  
EXPRESSION; LOBE; MOLECULE; MUTANTS

8/3, K/13 (Item 7 from file: 34)  
DI ALOG(R) File 34: Sci Search(R) Cited Ref Sci  
(c) 2010 The Thomson Corp. All rts. reserv.

03421941 Genuine Article#: ND426 No. References: 35  
Title: A CAPILLARY ELECTROPHORESIS METHOD FOR STUDYING APO, HOLO,  
RECOMBINANT, AND SUBUNIT DISSOCIATED FERRITINS  
Author: ZHAO Z; MALIK A; LEE ML; WATT GD  
Corporate Source: BRIGHAM YOUNG UNIV, DEPT CHEM/ PROVO/ UT/ 84602; BRIGHAM  
YOUNG UNIV, DEPT CHEM/ PROVO/ UT/ 84602  
Journal: ANALYTICAL BIOCHEMISTRY, 1994, V218, N1 (APR), P47-54  
ISSN: 0003-2697  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

lactoferrin.txt

... Abstract: protein mobilities increased, reached a plateau, and then slowly decreased with increasing core size, although buffer effects altered this CE behavior to some extent. Such results indicate that species formed early...

... those formed later in which the oligomeric iron core has formed. The binding of various metal ions to apo HoSF is readily determined by CE and provides a means for studying metal ion-ferritin interaction. Dramatic changes in the elution times were noted in different buffer systems, indicating that strong buffer interactions were occurring during metal binding to HoSF. (C) 1994 Academic Press, Inc.

... Research Fronts: HUMAN T-LYMPHOID (MOLT-4) CELLS)

92-0402 001 (PORCINE SERUM TRANSFERRIN; IRON RELEASE; HUMAN LACTOFERRIN)

92-1034 001 (CAPILLARY ELECTROPHORESIS; INDIRECT PHOTOMETRIC DETECTION; CHIRAL SEPARATION OF LEUCOVORIN)

8/3, K/14 (Item 8 from file: 34)

DIALOG(R) File 34: Sci Search(R) Cited Ref Sci

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03329483 Genuine Article#: NW782 No. References: 33

Title: ISOLATION OF IMMUNOGLOBULINS FROM CHEESE WHEY USING ULTRAFILTRATION AND IMMOBILIZED METAL AFFINITY-CHROMATOGRAPHY

Author: FUKUMOTO LR; LICHAN E; KWAN L; NAKAI S

Corporate Source: UNIV BRITISH COLUMBIA, DEPT FOOD SCI, 6650 NW MARINE DR/ VANCOUVER V6T 1Z4/ BC/ CANADA/; UNIV BRITISH COLUMBIA, DEPT FOOD SCI, 6650 NW MARINE DR/ VANCOUVER V6T 1Z4/ BC/ CANADA/

Journal: FOOD RESEARCH INTERNATIONAL, 1994, V27, N4, P335-348

ISSN: 0963-9969

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: ISOLATION OF IMMUNOGLOBULINS FROM CHEESE WHEY USING ULTRAFILTRATION AND IMMOBILIZED METAL AFFINITY-CHROMATOGRAPHY

... Abstract: method was developed to isolate immunoglobulins (Ig) from cheese whey using ultrafiltration (UF) and immobilized metal affinity chromatography (IMAC). Cheddar cheese whey was concentrated up to 30 times using UF prior...

... 1240 mg of IgG could be isolated with 52% purity using glycine in the eluting buffer. Glycine was found to be a better competing ligand in the eluting buffer than NH<sub>4</sub>Cl. Approximately 152 mg of lactoferrin and 90 mg of lactoperoxidase were isolated with the IgG. The concentration factor, IMAC matrix...

... Descriptors: IMMOBILIZED METAL AFFINITY CHROMATOGRAPHY; IMMUNOGLOBULINS; ULTRAFILTRATION; WHEY

Research Fronts: 92-6400 002 (IMMOBILIZED METAL AFFINITY-CHROMATOGRAPHY; PURIFICATION OF ENZYMES; HISTIDINE-RICH CA<sup>2+</sup>-BINDING PROTEIN)

8/3, K/15 (Item 9 from file: 34)

DIALOG(R) File 34: Sci Search(R) Cited Ref Sci

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02947148 Genuine Article#: MR316 No. References: 35

Title: QUANTITATIVE HPLC/ETAAS HYBRID METHOD WITH AN ONLINE METAL SCAVENGER FOR STUDYING THE PROTEIN-BINDING AND SPECIATION OF ALUMINUM AND IRON

Author: VANLANDEGHEM GF; DHAESE PC; LAMBERTS LV; DEBROE ME

Corporate Source: UNIV ANTWERP, DEPT NEPHROL HYPERTENS/ ANTWERP/ BELGIUM/;

lactoferrin.txt

UNI V ANTWERP, DEPT NEPHROL HYPERTENS/ ANTWERP/ / BELGIUM  
Journal: ANALYTICAL CHEMISTRY, 1994, V66, N2 (JAN 15), P216-222  
ISSN: 0003-2700  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: QUANTITATIVE HPLC/ETAAS HYBRID METHOD WITH AN ONLINE METAL  
SCAVENGER FOR STUDYING THE PROTEIN-BINDING AND SPECIATION OF ALUMINUM  
AND IRON

Abstract: A quantitative metal-free high-performance liquid  
chromatographic/electrothermal atomic absorption spectrometric  
(HPLC/ETAAS) technique allowing an adequate separation of the proteins  
and of the inorganic/organic metal species of interest was  
developed. A silica-based scavenger was placed proximal to the  
injection valve retaining any remaining Al and Fe originating from  
buffer solutions and recipients. ETAAS instrumental conditions  
and matrix modifiers were carefully selected to eliminate interferences

... Research Fronts: OF ALZHEIMERS-DISEASE; TRANSFERRIN IN SERUM  
92-0402 001 (PORCINE SERUM TRANSFERRIN; IRON RELEASE; HUMAN  
LACTOFERRIN)  
92-5111 001 (GRAPHITE-FURNACE ATOMIC-ABSORPTION SPECTROMETRY;  
ALTERNATIVE MERCURY PALLADIUM CHEMICAL MODIFIER; ELECTROTHERMAL  
VAPORIZATION...)

8/3, K/16 (Item 10 from file: 34)  
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci  
(c) 2010 The Thomson Corp. All rights reserved.

02707793 Genuine Article#: LY118 No. References: 43  
Title: GROWTH OF CELLS IN A NEW DEFINED PROTEIN-FREE MEDIUM  
Author: BERTHEUSSEN K  
Corporate Source: UNI V TROMSO, INST CLIN MED, POB 4/N-9038 TROMSO / NORWAY /;  
UNI V TROMSO, INST MED BIOL / N-9001 TROMSO / NORWAY/  
Journal: CYTOTECHNOLOGY, 1993, V11, N3, P219-231  
ISSN: 0920-9069  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

... Abstract: Long-term cultivation of non-dividing mouse macrophages. The  
main principle of SSR is a metal ion buffer containing a  
balanced mixture of iron and trace metals. Stability against  
precipitation of important metals...

... Descriptors: CELL CULTURE; CHELATORS; METAL ION BUFFER;  
SERUM-FREE MEDIUM; SERUM REPLACEMENT (SERUM SUBSTITUTE); TRACE  
ELEMENTS

... Research Fronts: TRANSFERRIN; DEFINED SERUM-FREE MEDIUM; HUMAN FETAL  
KIDNEY)

91-0393 001 (RABBIT SERUM TRANSFERRIN; BOVINE LACTOFERRIN  
MESSENGER-RNA; IRON REMOVAL; N-TERMINAL HALF-MOLECULE; SYNERGISTIC  
ACTION)

8/3, K/17 (Item 1 from file: 50)  
DIALOG(R) File 50: CAB Abstracts  
(c) 2010 CAB International. All rights reserved.

0004860691 CAB Accession Number: 19800458154  
The chromium manganese, cobalt and copper complexes of human  
lactoferrin.

Ainscough, E. W.; Brodie, A. M.; Plowman, J. E.  
Dep. of Chem, Biochem & Biophysics, Massey Univ., Palmerston North,  
New Zealand.

Inorganica Chimica Acta vol. 33 (2): p.149-153

Publication Year: 1979  
 ISSN: 0020-1693  
 Language: English  
 Record Type: Abstract  
 Document Type: Journal article

The chromium manganese, cobalt and copper complexes of human lactoferrin.

Human milk lactoferrin formed complexes of the type  $M_2Lf$  (where  $M = Cr(III), Mn(III)$  or  $Co(III)$  and  $Lf$  = lactoferrin) in Tris but not phosphate buffer. The properties of these complexes and their electronic spectra are reported along with those of...  
 ...previously reported, was seen at 677 nm. The spectral data confirmed the suggestion, that the metal binding sites in the protein are 2 or 3 tyrosyl residues and more than or...

... DESCRIPTORS: lactoferrin;

8/3, K/18 (Item 2 from file: 50)  
 DIALOG(R) File 50: CAB Abstracts  
 (c) 2010 CAB International. All rights reserved.

0004729586 CAB Accession Number: 19770433148

Isolation of lactoferrin from human milk by metal-chelate affinity chromatography.

Lonnerdal, B.; Carlsson, J.; Porath, J.  
 Inst. of Nutr., Box 551, S-751 22 Uppsala, Sweden.  
 FEBS Letters vol. 75 (1): p.89-92  
 Publication Year: 1977  
 ISSN: 0014-5793  
 Language: English  
 Record Type: Abstract  
 Document Type: Journal article

Isolation of lactoferrin from human milk by metal-chelate affinity chromatography.

Since lactoferrin ( $Lf$ ) binds  $Cu$  as well as  $Fe$ , and since  $Cu$  produced a more stable metal-chelate-gel complex,  $Cu$  was used for the affinity chromatography. The column was used to...

...whey. With (i), all of the  $Lf$  was adsorbed by the gel, and the eluting buffer removed all the  $Lf$  and no other proteins. With (ii), secretory immunoglobulin A (slgA) and serum albumin (HSA) were also adsorbed by the gel and desorbed by the eluting buffer. Adjustment of the eluting buffer gradient and addition of a Sephadex G-150 gel filtration stage removed HSA and slgA...

... DESCRIPTORS: lactoferrin;

8/3, K/19 (Item 3 from file: 50)  
 DIALOG(R) File 50: CAB Abstracts  
 (c) 2010 CAB International. All rights reserved.

0004365125 CAB Accession Number: 19760427776

Lactoferrin conformation and metal binding properties.

Parry, R. M., Jr.; Brown, E. M.  
 E. Regional Res. Cent., USDA, Philadelphia, Pennsylvania 19118, USA.  
 Advances in Experimental Medicine and Biology vol. 48 p.141-160  
 Publication Year: 1974

Language: English  
Record Type: Abstract  
Document Type: Journal article

Lactoferrin conformation and metal binding properties.

... and equilibrium visible and UV absorption spectra, circular dichroism and fluorescence emission spectra of bovine lactoferrin, indicated that it exists as a non-aggregating protein species with mol. wt. 86 000 in 0.1 M KCl-HEPES (N-(2-hydroxyethyl piperazine)-N'-2-ethane sulphonic acid) buffer, pH 6.5. The Fe<sup>3+</sup>-lactoferrin appeared to have a more spherical shape and a more stable conformation than lactoferrin. A flow diagram summarizes lactoferrin conformation changes occurring in the presence of acid and guanidine. No conclusive evidence was obtained...

... DESCRIPTORS: Lactoferrin

8/3, K/20 (Item 1 from file: 71)  
DI ALOG(R) File 71: ELSEVIER BIOBASE  
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0006679644 SUPPLIER NUMBER: 2006181039  
Structure of the zinc-saturated C-terminal lobe of bovine lactoferrin at 2.0 Å resolution  
Jabeen T.; Sharma S.; Singh N.; Bhushan A.; Singh T. P.  
AUTHOR EMAIL: tps@aims.aims.ac.in  
CORRESP. AUTHOR/AFFIL: Singh T. P., Department of Biophysics, All India Institute of Medical Sciences, New Delhi 110 029, India  
CORRESP. AUTHOR EMAIL: tps@aims.aims.ac.in  
Journal: Acta Crystallographica Section D: Biological Crystallography (Acta Crystallogr. Sect. D Biol. Crystallogr.), v61, n8, (1107-1115), 2005, United Kingdom  
PUBLICATION DATE: August 1, 2005 (20050801)  
CODEN: ABCRE  
ISSN: 0907-4449 eISSN: 1399-0047  
RECORD TYPE: Abstract; New  
DOCUMENT TYPE: Article  
LANGUAGES: English SUMMARY LANGUAGES: English  
NO. OF REFERENCES: 55

Structure of the zinc-saturated C-terminal lobe of bovine lactoferrin at 2.0 Å resolution

The crystal structure of the zinc-saturated C-terminal lobe of bovine lactoferrin has been determined at 2.0 Å resolution using crystals stabilized at pH 3.8. This is the first metal-saturated structure of any functional lactoferrin at such a low pH. Purified samples of proteolytically generated zinc-saturated C-terminal lobe were crystallized from 0.1 M MES buffer pH 6.5 containing 25% (v/v) polyethylene glycol monomethyl ether 550 and 0.1 M zinc sulfate heptahydrate. The crystals were transferred to 25 mM ammonium acetate buffer containing 25% (v/v) polyethylene glycol monomethyl ether 550 and the pH was gradually changed from...

... mounted on an RU-300 rotating-anode X-ray generator using crystals soaked in the buffer at pH 3.8. The structure was determined with the molecular-replacement method using the coordinates of the monoferric C-terminal lobe of bovine lactoferrin as a search model and was refined to an R factor of 0.192 for...

... present structure is essentially similar to that of the monoferric



lactoferrin.txt

C-terminal lobe of bovine lactoferrin, although it contains Zn SUP 2+ in place of Fe SUP 3+ in the metal-binding cleft as well as two additional Zn SUP 2+ ions on the surface of...  
...the largest number observed to date. The structure shows that the C-terminal lobe of lactoferrin is capable of sequestering a Zn SUP 2+ ion at a pH of 3.8...

8/3, K/21 (Item 2 from file: 71)  
DI ALOG(R) File 71: ELSEVIER BIOBASE  
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0005185197 SUPPLIER NUMBER: 2003188109  
Crystal structure of a proteolytically generated functional monoferric C-lobe of bovine lactoferrin at 1.9 Å resolution  
Sharma S.; Jasti J.; Kumar J.; Mohanty A.K.; Singh T.P.  
AUTHOR EMAIL: tps@aims.aims.ac.in  
CORRESP. AUTHOR/AFFIL: Singh T.P., Department of Biophysics, All India Inst. of Medical Sciences, Ansari Nagar, New Delhi 110029, India  
CORRESP. AUTHOR EMAIL: tps@aims.aims.ac.in  
Journal: Journal of Molecular Biology (J. Mol. Biol.), v331, n2, (485-496), 2003, United Kingdom  
PUBLICATION DATE: August 8, 2003 (20030808)  
CODEN: JMOBA  
ISSN: 0022-2836 eISSN: 1471-2970  
RECORD TYPE: Abstract; New  
DOCUMENT TYPE: Article  
LANGUAGES: English SUMMARY LANGUAGES: English  
NO. OF REFERENCES: 45

Crystal structure of a proteolytically generated functional monoferric C-lobe of bovine lactoferrin at 1.9 Å resolution  
This is the first crystal structure of a proteolytically generated functional C-lobe of lactoferrin. The purified samples of iron-saturated C-lobe were crystallized in 0.1 M Mes buffer (pH 6.5) containing 25% (v/v) polyethyleneglycol monomethyl ether 550 M and 0.1...

...by the molecular replacement method using the coordinates of the C-terminal half of bovine lactoferrin as a search model and refined to an R-factor of 0.193 for all...

...the C-lobe is essentially the same as that of C-terminal half of bovine lactoferrin but differs slightly in conformations of some of the loops and reveals a number of...

...been observed in the structure whereas only four were reported in the structure of intact lactoferrin, although domain orientations have been found similar in the two structures. The good quality of...

...has also revealed all the ten oligosaccharide units in the structure. The observation of two metal ions at sites other than the iron-binding cleft is another novel feature of the...

8/3, K/22 (Item 1 from file: 103)  
DI ALOG(R) File 103: Energy Sci Tec  
(c) 2010 Contains copyrighted material. All rights reserved.

07609384 INS-85-016652; EDB-85-116043  
Title: Interaction of human lactoferrin with the rat liver  
Author(s): Debanne, M.T.; Regoeczi, E.; Sweeney, G.D.; Krestynski, F.  
Corporate Source: McMaster Univ. Health Sciences Centre, Hamilton, Ontario, Canada

lactoferrin.txt

Sponsoring Organization: Not Available  
Journal Name: Am J. Physiol.  
Source: Journal Name: Am J. Physiol.; (United States); Journal Volume: 248  
Codens: : AJP  
Publication Date: 19850401  
Availability Date: 20091216  
OSTI Number(s): OSTI ID 5681880  
Contract Number (DOE): None  
Language: English  
Medium Dimensions: Medium X; Size: Pages: G463-G469

Title: Interaction of human lactoferrin with the rat liver  
Abstract: Binding of human lactoferrin (hLf) by purified rat liver plasma membranes was studied to clarify whether the liver possesses...  
...monosaccharides (galactose, N-acetylgalactosamine, mannose, and fucose) were ineffective. By omitting NaCl from the incubation buffer, binding was increased 3.6-fold. Erythrocyte ghosts bound hLf less firmly and alveolar macrophages...  
Descriptors: LACTOFERRIN; ...

...ALKALI METAL COMPOUNDS

8/3, K/23 (Item 1 from file: 305)  
DIALOG(R) File 305: Analytical Abstracts  
(c) 2010 Royal Soc Chemistry. All rights reserved.

231096 AA Accession No.: 57-06-F-00133 DOC. TYPE: j  
Experimental studies in metal affinity displacement chromatography of proteins.  
AUTHOR: Kim, Y. J.; Gramer, S. M  
CORPORATE SOURCE: Howard P. Isermann Dept. Chem., Rensselaer Polytech. Inst., Troy, NY 12180-3590, USA  
JOURNAL: J. Chromatogr. A, Volume: 686, Issue: 2, Page(s): 193-203  
CODEN: JCRAEY ISSN: 0021-9673  
PUBLICATION DATE: 2 Dec 1994 (941202) LANGUAGE: English

Experimental studies in metal affinity displacement chromatography of proteins.  
...ABSTRACT: Cu(II)-charged stationary phase. The feed mixture contained 3 mg cytochrome c, 12 mg lactoferrin, and 30 mg ribonuclease A in 3 ml 25mM phosphate buffer carrier, pH 5, containing 1M NaCl and 5mM imidazole. The displacer was 15 mg/ml of myoglobin in a 25mM phosphate buffer carrier, pH 8, containing 1M NaCl and 5mM imidazole. The feed was loaded at 0...  
...gradient elution reversed-phase chromatography (details given). Imidazole analysis was conducted by HPLC (details given). Metal affinity displacement chromatography resulted in multicomponent separations with very sharp boundaries between the zones.

8/3, K/24 (Item 1 from file: 35)  
DIALOG(R) File 35: Dissertation Abs Online  
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1025225 ORDER NO: NOT AVAILABLE FROM UNIVERSITY MICROFILMS INT'L.  
SEPARATION OF ANTIMICROBIAL PROTEIN FRACTIONS FROM ANIMAL RESOURCES FOR POTENTIAL USE IN INFANT FEEDING  
Author: AL-MASHIKHI, SHALAN ALWAN EDAN  
Degree: PH.D.  
Year: 1987

Lactoferrin.txt

Corporate Source/Institution: THE UNIVERSITY OF BRITISH COLUMBIA  
(CANADA) (2500)  
Source: VOLUME 49/08-B OF DISSERTATION ABSTRACTS INTERNATIONAL.  
PAGE 2944.

...phosphorus was removed from the supernatant.

Chromatographic methods were used for isolation of immunoglobulins and lactoferrin from whey proteins. By using gel filtration on Sephacryl S-300, 99, 83.3 and...

...biologically active immunoglobulin G were obtained from colostrum whey, acid and Cheddar cheese whey, respectively. Lactoferrin, selectively adsorbed to the heparin-attached Sepharose, was eluted with 5 mM Veronal-HCl containing...

...7.2. 1,4-Butanediol diglycidyl ether-iminodiacetic acid on Sepharose 6B, or so-called metal chelate-interaction chromatography (MCI C), was loaded with copper ion and used for the same purpose. Of the two peaks obtained, the first yellowish peak was rich in lactoferrin, while the second peak was rich in immunoglobulins. Some of the physical and chemical properties of the proteins in these peaks were studied. The possibility of isolating immunoglobulins and lactoferrin from electrolyzed whey was also investigated.

The method developed for isolation of immunoglobulins and lactoferrin from whey protein was applied to isolate these biologically important proteins directly from skim milk, blood...

...in MCI C column when skim milk was loaded in presence of 0.05 M Tris-acetate buffer containing 0.5 M NaCl, pH 8.2; however, this problem was solved by changing the equilibrating buffer to 0.02 M phosphate buffer containing 0.5 M NaCl, pH 7.0. When blood was directly applied to MCI C...

8/3, K/25 (Item 1 from file: 357)  
DIALOG(R) File 357: Derwent Biotech Res.  
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0462306 DBR Accession No.: 2009-07747 PATENT  
New arginine-substituted human lactoferrin peptides having specified amino acid sequences useful for preparing pharmaceutical composition for treating e.g. infections, inflammations, tumors, pain, wounds, scars and rheumatoid arthritis - pharmaceutical composition comprising arginine-substituted human lactoferrin peptide, useful in treatment of infection, inflammation, tumor, pain, wound and rheumatoid arthritis

AUTHOR: DOLPHIN G; MATTSBY-BALTZER I  
PATENT ASSIGNEE: PHARMASURGICS AB 2009  
PATENT NUMBER: WO 200962898 PATENT DATE: 20090522 WPI ACCESSION NO.: 2009-J55115 (200937)  
PRIORITY APPLIC. NO.: US 990066 APPLIC. DATE: 20071126  
NATIONAL APPLIC. NO.: WO 2008EP65186 APPLIC. DATE: 20081110  
LANGUAGE: English

New arginine-substituted human lactoferrin peptides having specified amino acid sequences useful for preparing pharmaceutical composition for treating e.g. infections, inflammations, tumors, pain, wounds, scars and rheumatoid arthritis - pharmaceutical composition comprising arginine-substituted human lactoferrin peptide, useful in treatment of infection, inflammation, tumor, pain, wound and rheumatoid arthritis

ABSTRACT: DERWENT ABSTRACT: NOVELTY - Arginine-substituted human lactoferrin peptides having specified amino acid sequences, are new. DETAILED DESCRIPTION - Arginine-substituted human

Lactoferrin.txt

Lactoferrin peptide having an amino acid sequence (having R1-Phe attached to first position, and Lys...

... of Asp and the amino group of Ser. BIOTECHNOLOGY - Preparation (disclosed): The arginine-substituted human lactoferrin peptides can be prepared by standard solid phase synthesis or recombinant DNA technology. ACTIVITY - Cytostatic...

... peptide solution (10 or 20 µl; 1 mg per spot) (test) or vehicle (phosphate buffer) (control) by applying onto infected spots. The solution was allowed to dry. After 4 hours...

... animals were killed. Viable counts were performed on washings obtained from treated areas by using metal ring placed over spot and gentle rubbing in presence of phosphate buffer (100 µl) containing Triton-x 100 (RTM surfactant) (0.01 %). Mean colony forming units...

... local administration includes nasal, vaginal and oropharyngeal administrations. No dosage given. ADVANTAGE - The peptides are lactoferrin derived peptides that produce same or better effects than human lactoferrin, lactoferricin and other lactoferrin derived peptides; while exhibiting production, technical and/or biochemical advantages. The peptides are based on sequence of amino acids 21-31 from N-terminal end of human lactoferrin and are substituted with arginine containing peptides, to produce improved properties; compared to other human lactoferrin peptides. The sequences Gly-Arg-Arg-Arg-Arg-Ser, Gly-Arg-Arg-Arg-Ser and...

... and uncharged, and thus have changed electrostatic properties. As receptors bind corresponding sequences of human lactoferrin where there are no N- and C terminal charges, capped peptides bind better as they...

DESCRIPTORS: pharmaceutical comp., arginine-substituted human lactoferrin peptide, appl., infection, inflammation, tumor, pain, wound, rheumatoid arthritis therapy protein sequence cytostatic antiinflammatory analgesic...

8/3, K/26 (Item 2 from file: 357)  
DIALOG(R) File 357: Derwent Biotech Res.  
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0344554 DBR Accession No.: 2004-16846 PATENT  
Novel cysteine protease inhibitor comprising lactoferrin, partial peptides of lactoferrin or transferrin, useful for treating osteoporosis or malignant hypercalcaemia - involving vector-mediated gene transfer and expression in host cell for use in therapy

AUTHOR: KATUNUMA N

PATENT ASSIGNEE: MORI NAGA MILK IND CO LTD 2004

PATENT NUMBER: WO 200450116 PATENT DATE: 20040617 WPI ACCESSION NO.: 2004-461009 (200443)

PRIORITY APPLIC. NO.: JP 2002347802 APPLIC. DATE: 20021129

NATIONAL APPLIC. NO.: WO 2003JP15007 APPLIC. DATE: 20031125

LANGUAGE: Japanese

Novel cysteine protease inhibitor comprising lactoferrin, partial peptides of lactoferrin or transferrin, useful for treating osteoporosis or malignant hypercalcaemia - involving vector-mediated gene transfer and...

ABSTRACT: DERWENT ABSTRACT: NOVELTY - A cysteine protease inhibitor (I) comprising lactoferrin, partial peptides of lactoferrin and transferrin, or two or more of their mixtures, as an active ingredient, is new...

... following: (1) food, beverage product composition or feed composition comprising (1); and (2) use of lactoferrin, partial peptide of lactoferrin, transferrin, or their mixtures, for preparing (1).  
BIOTECHNOLOGY - Preferred Inhibitor: In (1), the lactoferrin, transferrin or their mixtures, is of metal saturated type, partial metal saturated type or apo type. The lactoferrin or its partial peptide comprises amino acid residues 679-695 or 676-692 of a...

... cysteine protease (claimed); Inhibitor of metastasis. In vitro analysis of cysteine protease inhibitor such as lactoferrin, was carried out as follows: Human lactoferrin was used as test sample. To a substrate comprising 0.1 M acetic acid buffer (pH 5.5) and Z-Phe-Arg-MCA (Benzyl oxycarbonyl-L-phenylalanyl-L-arginine-4-methyl...

... indicated a complete inhibition of papain and cathepsin L by 10<sup>-6</sup> M of human lactoferrin. The cathepsin B was found to be inhibited by 10<sup>-5</sup> M of lactoferrin. USE - (1) is useful as a prophylactic and therapeutic agent of a disease in which...

... cysteine protease inhibition activity. (1) is safe and is suitable for prolonged administration. EXAMPLE - Human lactoferrin peptide was synthesized using an automated amino acid synthesis apparatus. Using 20% piperidine containing N...

DESCRIPTORS: recombinant cysteine protease-inhibitor, lactoferrin, transferrin prep., isol., vector-mediated gene transfer, expression in host cell, appl. allergy, muscular dystrophy...

8/3, K/27 (Item 3 from file: 357)  
DIALOG(R) File 357: Derwent Biotech Res.  
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0341358 DBR Accession No.: 2004-13650 PATENT  
Purifying and concentrating recombinant protein from complex media, comprises contacting complex media with diatomaceous earth for adsorbing recombinant protein to diatomaceous earth and desorbing purified and concentrated protein - recombinant protein production via plant culture  
AUTHOR: BLEUART S; BOULIS Y; TESTUD O; LARCHE-SCHIVANT L; MISON D; DEVILLERS C  
PATENT ASSIGNEE: MERISTEM THERAPEUTICS 2004  
PATENT NUMBER: EP 1403274 PATENT DATE: 20040331 WPI ACCESSION NO.: 2004-271922 (2004)  
PRIORITY APPLIC. NO.: EP 2002292404 APPLIC. DATE: 20020930  
NATIONAL APPLIC. NO.: EP 2002292404 APPLIC. DATE: 20020930  
LANGUAGE: English

... ABSTRACT: or cell parts in the dry state and undergoes a steeping step in a steeping buffer before bringing it into contact with at least one diatomaceous earth. The complex media has...

... preferably clarcel CBR3 or clarcel CBL. The diatomaceous earth is made up of the following metal oxides SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, CaO, MgO, K<sub>2</sub>O, Na<sub>2</sub>O. The diatomaceous earth has a granulometry...

... into contact with the complex media, where the earth is pre-wetted with water, steeping buffer or with deionized water. The complex media is brought into contact with at least one...

... preferably pH between 2.5-8.0 with about 15-20 volumes of a desorption buffer for batch processing and preferably followed by use of

lactoferrin.txt

about 5-10 volumes of desorption buffer for static processing.  
The diatomaceous earth is washed after the adsorption step and before  
the...

...macerate for 16 hours, under agitation and at ambient temperature, in 16  
volumes of steeping buffer consisting of 50 mM of glycine, 250 mM  
of NaCl and 1 mM of Triton...

...washed with 10 volumes of demineralized water and then resuspended in 15  
volumes of desorption buffer containing 50 mM glycine, 5mM NaCl,  
2 mM TritonX100 and pH was adjusted to 2...

DESCRIP TORS: recombinant gastric, pancreas lipase, lactoferrin  
protein, collagen, monoclonal antibody, hemoglobin, fibrinogen,  
monokunine, bikunine purification, tobacco leaf, maize seed solid  
complex...

8/3, K/28 (Item 1 from file: 149)  
DI ALOG (R) File 149: TGG Health&Wellness DB(SM)  
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03299945 SUPPLIER NUMBER: 165167527 (USE FORMAT 7 OR 9 FOR FULL TEXT  
)

Assessment of toxic metal body burden: ammunition, hot topics, and  
food for thought.(Clinical report)

Qui g, David W

Townsend Letter: The Examiner of Alternative Medicine, 287, 106(6)  
June,  
2007

DOCUMENT TYPE: Clinical report PUBLICATION FORMAT: Magazine/Journal

LANGUAGE: English RECORD TYPE: Fulltext TARGET AUDIENCE: Consumer;  
Professional

WORD COUNT: 4366 LINE COUNT: 00372

Assessment of toxic metal body burden: ammunition, hot topics, and  
food for thought.(Clinical report)

... Classically, this pertained to acute poisoning, but it has become  
increasingly accepted that sub-clinical metal toxicity (SCMT) exists  
and is typically a consequence of chronic low-level or intermittent  
exposure...

...assimilation and irreversible excretion of a toxin. The idea that a set  
threshold value for metal retention is associated with toxicity may  
be applied to large-scale population studies, but it...

...or body burden of toxic metals is urinalysis after administration of  
well-established chelators or metal-binding agents such as EDTA,  
DMPS, or DMSA. Strong support for this approach is provided...

...tissues and is not simply in circulation. Such data are obtained by  
comparison of urinary metal levels in a pre-provocation urine  
specimen (very recent exposure) and that following administration of a  
chelator/metal-binding agent. Ideally the pre- and post-specimens  
should be collected in the closest possible...

...rich CNS.

Facilitation of Maximal Yields Antioxidants

Many suggestions have been made towards maximizing urinary  
metal yields post-provocation, such as co-administration of reduced  
glutathione and other natural compounds/nutrients...

...for the use of appropriate antioxidant supplementation prior to  
provocation testing and throughout a comprehensive metal

detoxification regime.

L-glycine

L-glycine is a direct assisting agent for increasing post-provocative

...

...pharmaceutical agents are restricted. With higher affinities for the glycine-mobilized intracellular metals, the circulating metal-binding agents preferentially snatch the metals like alpha dogs and carry them to the kidneys...

...choice.

(FIGURE 1 OMITTED)

The L-glycine boost may be especially helpful for obtaining higher metal spills for "sensitive" patients for whom one might anticipate problems with the most productive DMSA...

...safety of long-term use of L-glycine supplementation as a component of a sustained metal detoxification protocol has not been established. Potential concerns include excessive production of oxalic acids and...

...a viable option. Therefore, a study was conducted to determine if clinically useful information about metal retention could be obtained from rectal administration of DMSA followed by a six-hour urine...

...three to four years old), who had never received any treatments or provocative tests for metal retention. The dose DMSA in the suppositories was 20 mg/kg (none > 500 mg), and...

...were marginal effects on nickel excretion, and no consistent increases were observed for any other metal for these particular children.

Figures 1 and 2 clearly illustrate the consistency and magnitude of...

...EDTA suppository (750 mg Ca-EDTA) and did not detect a significant acute effect on metal excretion. However, by comparison of post-DMSA urinary metals before and after ninety days of...

...data indicate that at the dose utilized (750 mg), the suppositories did not yield urine metal spills that compare to that of intravenous Ca-EDTA or DMPS, oral DMSA or DMPS...

...lower creatinine has less lean body mass, which might be envisioned as a sort of buffer, her kidneys, vascular endothelium, spleen, liver, and especially her CNS might be more likely to...

...of Ca-EDTA. (26) Recently, a very astute practitioner with many years of experience in metal detoxification suspected Mn toxicity in a patient whose Parkinson's-like symptoms improved transiently after...

...exposures to toxic metals. Environ Health Perspect. 1995;103: 1048-52.

10. Qiig DW Chronic metal toxicity: assessment of exposure and retention. In Textbook of Natural Medicine. 3rd edition. J.E...

...Tank participants. Unpublished observations. 2002.

19. Qiig DW The efficacy of rectal suppositories containing dithiol metal binding agents for assessment of metal retention in autistic children (in preparation).

20. Lustberg M, et al. Blood Lead Levels and...

...up study. J Occup Environ Med. 2006;48:644-49.

28. Tendon SK. Chelation in metal intoxication. IV. Influences of PAS and CDTA on the excretion of manganese in rabbits given...

...by David W. Qiig, PhD

Vice-President, Scientific Support, Doctor's Data

Table 1. Fecal Lactoferrin concentrations associated with active and inactive IBD (1).

Group	# of Specimens	Fecal Lactoferrin Mean mcg/ml +/- SE
Inactive UC	41	67 +/- 24
Active UC	31...	

8/3, K/29 (Item 2 from file: 149)  
 DI ALOG (R) File 149: TGG Health & Wellness DB (SM)  
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02942940 SUPPLIER NUMBER: 103563588 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Environmentally relevant metal and transition metal ions enhance Fc(epsilon)RI-mediated mast cell activation. (Research). Walczak-Drzewiecka, Aurelia; Wyszolowska, Janina; Dastych, Jaroslaw Environmental Health Perspectives, 111, 5, 708(6)

May, 2003

PUBLICATION FORMAT: Magazine/Journal ISSN: 0091-6765 LANGUAGE: English

RECORD TYPE: Fulltext TARGET AUDIENCE: Academic

WORD COUNT: 6247 LINE COUNT: 00520

Environmentally relevant metal and transition metal ions enhance Fc(epsilon)RI-mediated mast cell activation. (Research).

TEXT:

...some of its adverse effects on human health. We sought to determine the effect of metal and transition metal ions on allergen-mediated mast cell activation. We observed that several metal and transition metal ions activated mast cells and enhanced allergen-mediated mast cell activation. Thus, (Al.sup.3... ..beta)-D-hexosaminidase, and (Al.sup.3+) and (Ni.sup.2+) enhanced antigen-mediated release. Metal and transition metal ions also induced significant secretion of interleukin (IL)-4 and increased antigen-mediated IL-4 secretion in mast cells. These effects of metal and transition metal ions on mast cells were observed at concentrations that do not result in direct cytotoxicity...

\*\*\*\*\*

Environmental or occupational exposures to metal and transition metal compounds have been linked to adverse health effects in humans, including dysfunctions of the immune...

...et al. 2000; Stejskal and Stejskal 1999). One of the possible sources of exposure to metal and transition metal ions in a nonoccupational environment is the particulate matter (PM) present in the air. The...

...correlation between some biological effects of residual oil fly ash observed in vitro and its metal and transition metal content has been reported (Lambert et al. 2000; Samet et al. 1997).

An increase in...

...clear which component of airborne pollutants constitutes the greatest health risk for asthmatic patients, but metal ions are considered one of the likely culprits (Costa and Dreher 1997).

IgE-mediated allergic...

...IL-4 (Brown and Hural 1997; Gordon et al. 1990; Metcalfe et al. 1997).



Heavy-metal ions (Hg. sup. 2+) and (Ag. sup. 2+) induce mediator release and enhance allergen-mediated...

...et al. 2001). We decided to expand this observation and investigate effects of several other metal and transition metal ions on allergen-mediated mast cell activation. In this article, we will show that several metal ions activate mast cells in vitro to release granule contents and produce IL-4. Furthermore, some metal ions enhance IgE-mediated mast cell degranulation and IL-4 expression. We observed this effect...

...might be relevant for environmental exposure. The enhancement of allergen-mediated mast cell activation by metal and transition metal ions could be one mechanism that allows for exacerbation of allergen-driven asthma symptoms by...

...cytokine secretion assay.

Neutral red uptake assay. Mast cells were incubated with increasing concentrations of metal ions for 4 hr at 37(degrees)C, washed twice with centrifugation, then incubated with...

...nm To verify that the neutral red uptake assay can detect the cytotoxic effect of metal salts, the cytotoxicity of increasing concentrations of Cd(Cl. sub. 2) was assessed using parallel...

...without phenol red were placed in individual wells on 96-well plates. Increasing concentrations of metal ions dissolved in media with or without indicated concentrations of antigen (DNP-HSA) dissolved in...

...concentration. This was followed by the addition of 60 (micro)L 0.08 mM citric buffer, pH 4.5, containing 8 mM p-nitrophenyl-N-acetyl-(beta)-D-glucopyranoside as a...

...Cd(Cl. sub. 2), and Pb((N(O. sub. 3)). sub. 2) in the assay buffer on the enzymatic activity of N-acetyl-(beta)-D-hexosaminidase. None of the tested compounds...

...in complete DMEM at a density of (10. sup. 6) cells/mL. Increasing concentrations of metal ions, antigen (DNP-HSA), or a combination of both were added in a final volume...

...ELISA reader at 450 nm

Western blotting. Cells were collected by centrifugation and lysed in buffer containing 50 mM Tris-HCl (pH 8.0), 1% nonionic detergent IGEAL CA-630 (Sigma)...

...000 x g for 15 min at 4(degrees)C. Supernatants were mixed with loading buffer containing sodium dodecyl sulfate (SDS) and 2-mercaptoethanol, boiled for 5 min, and separated with SDS...

...which can be visualized with specific staining (Demo et al. 1999). To determine if some metal and transition metal ions expected to be present in PM of ambient air could cause mast cell degranulation...

...compounds induced a much higher release (11%), which suggests that the effects of exposure to metal and transition metal ions at these concentrations could be additive. We next decided to systematically test the effect...

...a decrease in neutral red uptake compared with control. Thus, exposure of mast cells to metal and transition metal salts at concentrations and incubation time employed did not result in a decrease in cell...

...antigen by degranulation and cytokine secretion. To determine how the presence of noncytotoxic concentrations of metal ions affects the antigen-mediated degranulation, we incubated sensitized mast cells with concentrations of tested metal ions or antigen (DNP-HSA) or a combination of both. As shown in Figure 3, incubation of mast cells in the presence of some metal and transition metal ions resulted in release of a significantly higher percentage of N-acetyl-(beta)-D-hexosaminidase...

...in sensitized mast cells (Figure 3) differed from those observed in nonsensitized cells (Figure 1). Metal ions in combination with optimal concentrations of antigen resulted in greater N-acetyl-(beta)-D...

...were observed with (10.sup.-7) M Ni S(O.sub.4). For these two transition metal ions, the combination of antigen and ions resulted in a release of the amount of...

...the effect on antigen-mediated N-acetyl-(beta)-D-hexosaminidase release. Thus, noncytotoxic concentrations of metal and transition metal ions stimulated mediator release and enhanced antigen-mediated mediator release in mast cells.

(FIGURE 3...)

...et al. 1990; Hamawy et al. 1995; Kent et al. 1994). To determine if transition metal and metal ions affect this signal transduction process, mast cells were activated with the optimal dose of... several electrophoretic bands compared with mast cells activated with antigen in the absence of these metal ions. (Ni.sup.2)+ and (Pb.sup.2+) mediated an increase in the amount of...

...37 kD bands. Interestingly, despite the overall inhibition of protein phosphorylation observed with this transition metal ion, the 33 kD band shows a greater level of phosphorylation than those observed in...

...antigen express and secrete to supernatant several proinflammatory cytokines including IL-4. To determine if metal ions change the level of expression of IL-4 in antigen-activated mast cells, we...

...the level observed with optimal dose of antigen alone. Thus, at certain concentrations, all tested metal and transition metal ions either induced IL-4 secretion or enhanced antigen-driven IL-4 secretion from mast cells.

(FIGURE 5 OMITTED)

#### Discussion

In this article we have shown that several metal and transition metal ions induced mediator release and enhanced antigen-mediated mediator release in mast cells (Figures 1...

...at ion concentrations that did not cause cell death (Figure 2). Some effects of transition metal and metal ions on the level of tyrosine phosphorylation of proteins in antigen-activated mast cells were...

...and translation (Dastyk et al. 1999). All these observations are consistent with the hypothesis that metal and transition metal compounds, at certain concentrations, are capable of activating mast cells and enhancing antigen-mediated activation.

Metal and transition metal compounds can affect functions of multiple cell types (Ghio et al. 1998; Klein et al...

...There are, however, some unique characteristics of mast cells that affect how they respond to metal ions and how such responses affect human health. Mast cells are present in large numbers...

...1969) in humans and in experimental animals. Thus, mast cell activation could be involved in metal- and transition metal-mediated immunomodulation.

The effects of metal and transition metal ions on mast cells were observed at concentrations relevant for occupational and environmental exposure. For...

...1997). Unlike the experimental setting, environmental sources such as PM contain a mixture of multiple metal and transition metal salts.

We observed that the mixture of (Ni.sup.2+), (Al.sup.3+), (Cd.sup...

...sup.2+) induced mast cell degranulation at a level suggesting that the effects of these metal ions on mast cell function could be additive (Figure 1). Thus, it seems possible that metal ions derived from PM could reach the concentrations necessary to induce or enhance mast cell...

...the pathogenic process underlying an asthma attack (Busse and Lemanske 2001). We observed that several metal ions enhanced antigen-mediated mast cell activation (Figures 3 and 5), which resulted in the...

...asthma symptoms. It would, however, require concomitant exposure of asthmatic patients to both allergen and metal compounds. Such a possibility is supported by data demonstrating the presence of multiple allergens being...

...modulated by environmental factors that enhance or suppress responses of immune cells to antigen. Several metal and transition metal ions mediate immunomodulation in experimental animals (Bizzazzi 1999; Kieley et al. 1997; Lambert et al...

...pollution on the immune system. To address these concerns, the cellular and molecular mechanisms of metal ion-mediated immunomodulation must be better understood. Metal and transition metal ion-mediated mast cell activation resulting in release of multiple proinflammatory and immunomodulatory mediators could...

...a novel flow cytometric annexin-V binding assay. Cytometry 36:340-348.

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Donaldson...

...Ghio AJ, Carter JD, Samet JM, Reed W, Quay J, Dailey LA, et al. 1998. Metal-dependent expression of ferritin and lactoferrin by respiratory epithelial cells. Am J Physiol 274:L728-L736.

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...asthma. Annu Rev Med 53:477-498.

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...a normal population and a population undergoing dialysis. Analyst 114:1671-1674.

Norseth T. 1988. Metal carcinogenesis. Ann NY Acad Sci 534:377-386.

Ormstad H. 2000. Suspended particulate matter in...

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00105601

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Tissue Destruction By Neutrophils (Mechanisms of Disease)

Weiss, Stephen J.

The New England Journal of Medicine

Feb 9, 1989; 320 (6), pp 365-376

LINE COUNT: 00991

WORD COUNT: 13680

TEXT

...if  $\alpha_2$  ( $\alpha_2$ ),  $H_2\alpha_2$ , and a suitable transition metal catalyst (usually iron-based) are mixed. Given that neutrophils are able to act as a...

...pool size available for the production of  $OH\cdot$ , and by releasing an iron-binding protein, lactoferrin, that sequesters available iron in a form that fails to catalyze  $OH\cdot$  formation (Ref. 12...is metabolized by myeloperoxidase; azide, a heme-enzyme inhibitor that blocks myeloperoxidase activity; halide-free buffer, a medium in which neutrophils will generate  $H_2\alpha_2$  and release...that 0.5 percent  $HOCl$  was toxic to human tissues but only in a simple buffer system in vitro (Ref. 36-38). In a physiologic environment, even millimolar quantities of  $HOCl$ ...  
? ds

Set	Items	Description
S1	2	E1- E12 AND LACTOFERRIN
S2	36	E1- E12
S3	2	S2 AND LACTOFERRIN
S4	2	E1- E12 AND LACTOFERRIN
S5	2	S4 AND LACTOFERRIN
S6	1	LACTOFERRIN AND PH AND BUFFER AND METAL AND (WOUND? OR CONTAMIN?)
S7	52	(LACTOFERRIN AND BUFFER AND METAL)
S8	30	RD (unique items)